Claims

1. A system for producing at least two differently focused images of an object, comprising:

at least two sensors separated from one another;

a beam splitting means for splitting a beam of radiation from the object into at least two resultant beams; and

wherein the path length of the two resultant beams to the respective sensors is different.

2. The system of claim 1 wherein the beam splitting means comprises a prism.

3. The system of claim 2 wherein the prism includes dichroic beam splitting elements which split the beam into at least two beams, each of a different colour.

4. The system of claim 1 wherein the sensors comprise CCD arrays.

5. The system of claim 1 wherein the sensors are located at different distances from respective exit points of the resultant beams from the beam splitting means to thereby produce the different path lengths.

6. The system of claim 1 wherein the different path lengths are provided by the location of optical elements between the beam splitting means and the sensors, so as to create a different path length of the resultant beam from the beam splitting means to the respective sensor.

7. The system of claim 6 wherein the element comprises a pair of transparent wedge-shaped members which are movable relative to one another so as to alter the amount of the wedge through which the resultant beam passes to thereby change the path length of the resultant

beam to produce the different path lengths. In this embodiment, the sensors are located at equal distances from the beam splitting means.

8. The system of claim 1 wherein a beam conditioning element is located between the beam splitting means and the respective sensor.

9. The system of claim 8 wherein a plurality of beam conditioning elements are locatable between the beam splitting means and the sensors, and moving means is provided for moving the elements, such as to bring one of the elements in turn into registry with the respective sensor so the resultant beam passes through the said one of the elements.

10. The system of claim 1 wherein the beam comprises an electron beam, and the beam splitting means comprises a plurality of sensors arranged along the direction of the path of the electron beam, and wherein some of the electron beam is detected by a first of the sensors and some of the beam passes through the first of the sensors to a subsequent sensor for detection by that sensor to thereby produce the different path lengths.

11. A system for producing differently focused images of an object, comprising:

at least two sensors separated from one another;

a beam splitting means for splitting a beam of radiation from the object into at least to resultant beams; and

an optical element located between at least one of the sensors and the beam splitting means in the path of the corresponding resultant beam for changing the path length of the beam from the beam splitting means to the sensor to thereby produce resultant beams having two different path lengths which are detected by the

respective sensors.

12. The system of claim 11 wherein the beam splitting means comprises a prism.

13. The system of claim 11 wherein the sensors comprise CCD arrays.

14. The system of claim 11 wherein the element comprises a pair of transparent wedge-shaped members which are movable relative to one another so as to alter the amount of the wedge through which the resultant beam passes to thereby change the path length of the resultant beam to produce the different path lengths.

15. The system of claim 14 wherein a beam conditioning element is located between the beam splitting means and the respective sensor.

16. The system of claim 15 wherein a plurality of beam conditioning elements are locatable between the beam splitting means and the sensors, and moving means is provided for moving the elements, such as to bring one of the elements in turn into registry with the respective sensor so the resultant beam passes through the said one of the elements.

17. The system of claim 16 wherein conditioning elements may include colour imaging filters.

18. A system for producing differently focused images of an object, comprising:

at least two sensors separated from one another;

a beam splitting means for splitting an incoming beam of radiation from the object into at least two resultant beams; and

a beam conditioning member having:

(c) a plurality of beam conditioning elements; and

(d) moving means for moving the member so as to bring the selected one of the elements into alignment with the respective sensor.

19. The system of claim 18 wherein the beam splitting means comprises a prism.

20. The system of claim 18 wherein the sensors are located at different distances from respective exit points of the resultant beams from the beam splitting means to thereby produce the different path lengths.

21. The system of claim 18 wherein the different path lengths are provided by the location of optical elements between the beam splitting means and the sensors, so as to create a different path length of the resultant beam from the beam splitting means to the respective sensor.

22. The system of claim 21 wherein the element includes a pair of transparent wedge-shaped members which are movable relative to one another so as to alter the amount of the wedge through which the resultant beam passes to thereby change the path length of the resultant beam to produce the different path lengths.

23. A method of producing differently focused images of an object, including:

providing at least two sensors separated from one another;

splitting a beam of radiation emanating from the object into at least two resultant beams; and

causing the path length of the two resultant beams to the respective sensors to be different.

24. The method of claim 23 wherein the differently focused images are comprised of at least one negatively

focused image, an in-focus image, and at least one positively focused image.

25. A system for determining movement of an object, including:

at least one sensor for receiving a beam of radiation from the object and for capturing at least two sequential images of the object which are time delayed with respect to one another;

means for comparing the images with respect to one another so as to determine a difference between the images; and

means for determining whether the object has moved based on the comparison of the images.

26. The system of claim 25 wherein the images comprise phase images of the object.

27. The system of claim 25 wherein the comparison is made by the processing means based on a difference between the images.

28. The system of claim 25 wherein comparison of the images and the determination of whether the object has moved may be performed by a single processing means.

29. The system of claim 28 wherein the determination of whether the object has moved is made by creating a phase image of the object from the images which are captured by the sensor and inspecting the phase image to observe light and dark shadows on details in the image, and thereby determining whether the object is moving towards or away from the sensor.

30. A method of determining movement of an object, including:

detecting a beam of radiation from the object by

a sensor;

producing at least two time delayed images of the object;

comparing the images with respect to one another; and

determining if the object has moved based on a comparison of the images.